RUTGERS
Rutgers Business School
Newark and New Brunswick

Supply Chain Management
Course Number: 22:799:586
Course Title: Operations Analysis MS

COURSE DESCRIPTION

The objective of this course is to introduce models and tools to efficiently manage operations and supply chains that produce and distribute products and services. Topics include forecasting, production and logistics, sales and operations planning, inventory management, and project management. We illustrate the effectiveness of these models and tools by real-life cases and examples drawn from diverse industries such as manufacturing, transportation, pharmaceutical, fashion and healthcare.

COURSE MATERIALS

Suggested Textbook

1. S. Nahmias and T. L. Olsen, *Production and Operations Analysis*, Waveland Press, Inc., 2015 (7th edition). ISBN 978-1-4786-2306-9. (Abbreviated as *SN*; 5th and 6th edition would also work.)

Required Materials

2. A case-pack is required for this course. Instructions and ordering information will be provided in the *Getting Started* module.
3. Microsoft Excel (version ≥ 2010) will be used extensively in this course. The following Excel Add-Ins should be installed: "Analysis ToolPak" and "Solver Add-in".

The course will be taught online. In each module, we will complete lectures and all the associated readings, discussions, case studies, self-assessments and homework assignments (see the Course Schedule). Class related materials (lecture notes, recordings, videos, discussion topics, self-assessments and solutions, homework and solutions, etc.) will be posted online.

Examples may be used in a lecture to explain a technique or a model, and students are strongly encouraged to repeat these examples to enhance the learning. Self-assessment questions and the corresponding solutions may be provided for students to practice immediately. It is strongly recommended that students complete a self-assessment by themselves before checking the solution. Problems similar to these examples and self-assessments may be tested in the exams.

LEARNING GOALS AND OBJECTIVES

This course is designed to help students develop skills and knowledge in the following area(s):

- **Business knowledge**. Students will have a command of operations analysis theory and practice.
  Students who complete this course will demonstrate:
  a) Mastery of fundamental operations analysis concepts and an ability to integrate and apply these concepts to solve practical business problems.
  b) Proficiency at developing, analyzing and interpreting quantitative models to solve practical business problems.
- **Ethical judgement**.
  Students who complete this course will demonstrate:
  a) Recognition of ethical dilemmas in decision-making scenarios.
  b) Ability to critically evaluation business decision-making scenarios and develop innovative and ethical solutions.
- **Global perspective**. Students will have the breadth of perspective necessary to effectively function in a global and diverse business environment. Students who complete this course will demonstrate:
  a) Ability to lead and/or participate in culturally and demographically diverse teams and classroom environment.
- **Persuasive communication**. Students will be effective communicators.
  Students who complete this course will demonstrate:
  a) Ability to construct clear, concise, and convincing written descriptions of how quantitative techniques are used in their businesses.
  b) Ability to construct and deliver clear, concise, and convincing oral presentations.

Students develop these skills and knowledge through the following course activities and assignments:

- **Lectures**. Class lectures focus on the underlying theory and applications of quantitative models to business situations.
- **Homework**. Homework problems on the topics covered will be assigned to enhance the understanding of concepts and models.
- **Readings and discussions**. Readings from newspapers, magazines and case studies relevant to each topic are provided to establish the connection to practice. Class discussions provide an opportunity for students to share experiences related to each topic and learn from each other. They also help students develop ethical judgement in decision-making scenarios.
- **Exams**. There will be two non-cumulative examinations that reinforce the knowledge learned in lectures, readings and homework.
- **Team Project**. Students will team up to complete a term project. The final deliverables include a presentation, project report, and data analysis when applicable. The term project does not only provide students an opportunity to practice the knowledge learned, but also train them necessary communication skills and awareness to cultural and demographical diversity.

PREREQUISITES

None. However, basic knowledge of algebra and calculus is very helpful.

ACADEMIC INTEGRITY

I do NOT *tolerate cheating*. Students are responsible for understanding the RU Academic Integrity Policy http://academicintegrity.rutgers.edu/

I will strongly enforce this Policy and pursue *all* violations. On all examinations and assignments, students must sign the RU Honor Pledge, which states, "On my honor, I have neither received nor given any unauthorized assistance on this examination or assignment." I will screen all written assignments through *SafeAssign* or *Turnitin*, plagiarism detection services that compare the work against a large database of past work. Don't let cheating destroy your hard-earned opportunity to learn. See business.rutgers.edu/ai for more details.

DISCUSSIONS

Continuing, thoughtful, and thorough participation in all aspects of the class will enable students to maximize their benefit from this course. In some modules, discussion topics will be posted, and every student is expected to contribute to the discussions, by either replying to the discussion topic or commenting on others' replies. The purpose of discussions is to enhance learning, exchange ideas and build a team environment. Comments posted prior to () of the ending date of a module (see the Course Schedule) will earn participation credits, while it is encouraged that the discussions continue if any new thoughts are available. Quality is more important than quantity (i.e., number of words) in your replies.

HOMEWORK ASSIGNMENTS

Homework assignments are practical reinforcements of what are taught in class. The assignments should be **submitted in typed form online**. Detailed requirements (e.g., what to write and what to submit) are available for each assignment.

Assignments will be due at () of the ending date of a module (see the Course Schedule), unless otherwise stated. **Solutions for each assignment will be announced online immediately after the due date in the Announcements area.** Penalty for late submission within one week is 40% of the points allocated to the assignment. Unless a documented reason is produced for unusual circumstances, **late submissions will not be accepted more than one week late**. Students should feel free to communicate with the instructor to ask for clarifications of the homework assignment questions. However, pre-grading will not be practiced. Homework grades may be adjudicated at the discretion of the instructor, but not later than 2 weeks after being assigned.

TERM PROJECT

A term project is a necessary and important part of this course for students to gain hands-on experiences by applying the techniques learned to real-world applications. Students will team up into groups of 3-5 members (team size may vary per class size). Detailed instruction on the term project is available online.

There are three stages to complete the term project.

1. Sign up for a team. You should get familiar with your classmates by reading their bios, as well as their comments posted to discussions.
2. Determine a potential topic for the project, and submit a **one-page** project proposal, including the story, the problem, and the proposed solution approach. You will receive feedbacks on your proposal. You can then continue with the project once your proposal is approved.
3. Complete the project, and submit the final deliverables, including your team's presentation (see the Term Project Instruction for details).

Team members are expected to contribute roughly equally. **Each team member must specify his/her percentage of contribution on the final report.** The project will be graded as a whole but each team member's grade also depends on his/her contribution. The project score is determined by both the quality of work (creativity, importance, difficulty, effectiveness, workload, etc.) and the effectiveness of presentation (clarity, engagement, teamwork, etc.).

EXAMS

There will be two exams: a midterm exam will cover the materials in the first half of the semester (Modules 1-5), and a final exam will cover the rest (non-cumulative). You may use the following course-related materials during the exam:

- Textbooks, notes and a calculator that you physically possess;
- Course-related PowerPoint slides, Excel files and Word documents on your computer, including the ones that you may create during the exam to assist problem solving;
- Course contents on Canvas, including the course videos.

However, this exam is not open communication of any kind, including the use of your cell phone or any communication app on your computer. In addition, you are prohibited to browse internet during the exam, except the course contents on Canvas. Further, you should not share any exam-related information to your peer students or general public.

In order to remain compliant with the federal requirement of student authentication in online courses, you will take your exams in this course using Proctortrack software, a remote proctoring service. There is no extra fees associated with use of Proctortrack. Proctortrack software will monitor your physical movement and background noise (via your computer camera), as well as your computer screen. Any violation of the exam policy will result in zero grade and trigger the investigation for academic integrity violations.

Technical requirements: You will need a web camera and a desktop or laptop computer. Mobile devices cannot be used. Please view the complete technical requirements

(https://www.proctortrack.com/students/tech-requirements/), as well as the FAQ (http://support.proctortrack.com/).

Detailed instructions on how to use Proctortrack are provided in the Student User Manual in the Course Essentials module. Before proceeding to the Getting Started module, you should set up your account profile by taking an ungraded "Practice Onboarding Quiz". This quiz is intended to identify any potential software problems.

Questions and requests for tech support should be addressed by calling (888) 326-5219 or by going to www.proctortrack.com.

GRADING POLICY

Final course grades are determined based on a total score computed as a weighted sum of the following grade components:

Class Participation	10%
Homework	25%
Project	20%
Midterm	20%
Final	25%
Total	100%

The following policies will apply to grading:

- Your grades of each component and final numerical grade will be posted online. The final letter grade is based on the ranking of your final numerical grade.
- There is no extra credit in addition to the grade components above.
- Please keep in mind that your final grade is not subject to negotiation. Your final grade will be adjusted only if a grading error is identified. If you believe there is a grading error, you should ask for a review meeting within one week of receiving your grade. Final grades will not be adjusted based on consequences, such as hurt pride, lost scholarships, lost tuition reimbursement, lost job opportunities, or dismissals, as it is dishonest to attempt to influence faculty in an effort to obtain a grade that you did not earn.

COURSE SCHEDULE

Note that the following schedule may be modified by the instructor as necessary.

Module	Topic	Assignment
1	**Introduction** (*SN, Chapter 1*) ✦ Course overview ✦ Supply chain operations and strategies ✦ Impact of operations analysis	▪ Discussion 1 & 2
2	**Forecasting I** (*SN, Chapter 2*) ✦ Forecasting laws ✦ Time series models ✦ Simple linear regression for trends	▪ Homework 1
3	**Forecasting** (*SN, Chapter 2*) ✦ Forecasting financial markets ✦ Forecasting seasonal demand	▪ Discussion 3 & 4
4	**Sales and Operations Planning I** (*SN, Chapter 3 & Supplement 1*) ✦ Business planning processes ✦ Linear programming (LP) models ✦ Solving LPs using Excel	▪ Homework 2
5	**Sales and Operations Planning II** (*SN, Supplement 1*) ✦ Sensitivity analysis of LP solutions ✦ LP applications in workforce planning, production planning, and transportation planning	▪ Team sign-up
6	**Sales and Operations Planning III** (*SN, Supplement 1*) ✦ Integer programming (IP) models ✦ IP applications in project selection and logistics network design ✦ Solving IPs using Excel ✦ Case Study: C&H Logistics	✦ Homework 3 ✦ Discussion 5
7	**Midterm Exam**	▪ Midterm
8	**Inventory Management** (*SN, Chapters 4 & 5*) ✦ Introduction to inventory management ✦ Newsboy model ✦ Fashion industry examples	✦ Homework 4 ✦ Discussion 6
9	**Inventory Management** (*SN, Chapters 4 & 5*) ✦ Cycle stock and safety stock models ✦ Case Study: ImportHome.com	▪ Homework 5
10	**Project Management** *(SN, Chapter 10)* ✦ Project management overview ✦ Critical path method ✦ Case Study: American Royal Financial	▪ Discussion 7 & 8
11	**Project Proposal and Feedback**	▪ Project proposal
12	**Project Management** *(SN, Chapter 10)* ✦ Crashing ✦ Project evaluation and review technique (PERT) ✦ Critical chain project management	▪ Discussion 9 & 10
13	**Project Submission and Presentation**	▪ Project deliverables
14	**Final Exam**	▪ Final

SUPPORT SERVICES

If you need accommodation for a ***disability***, obtain a Letter of Accommodation from the Office of Disability Services. The Office of Disability Services at Rutgers, The State University of New Jersey, provides student-centered and student-inclusive programming in compliance with the Americans with Disabilities Act of 1990, the Americans with Disabilities Act Amendments of 2008, Section 504 of the Rehabilitation Act of 1973, Section 508 of the Rehabilitation Act of 1998, and the New Jersey Law Against Discrimination. More information can be found at ods.rutgers.edu.

[Rutgers University-New Brunswick ODS phone (848)445-6800 or email dsoffice@echo.rutgers.edu]

[Rutgers University-Newark ODS phone (973)353-5375 or email ods@newark.rutgers.edu]

If you are ***pregnant***, the Office of Title IX and ADA Compliance is available to assist with any concerns or potential accommodations related to pregnancy.

[Rutgers University-New Brunswick Title IX Coordinator phone (848)932-8200 or email jackie.moran@rutgers.edu]

[Rutgers University-Newark Office of Title IX and ADA Compliance phone (973)353-1906 or email TitleIX@newark.rutgers.edu]

If you seek ***religious accommodations***, the Office of the Dean of Students is available to verify absences for religious observance, as needed.

[Rutgers University-New Brunswick Dean of Students phone (848)932-2300 or email deanofstudents@echo.rutgers.edu]

[Rutgers University-Newark Dean of Students phone (973)353-5063 or email DeanofStudents@newark.rutgers.edu]

If you have experienced any form of ***gender or sex-based discrimination or harassment***, including sexual assault, sexual harassment, relationship violence, or stalking, the Office for Violence Prevention and Victim Assistance provides help and support. More information can be found at http://vpva.rutgers.edu/.

[Rutgers University-New Brunswick incident report link: http://studentconduct.rutgers.edu/concern/. You may contact the Office for Violence Prevention and Victim Assistance at (848)932-1181]

[Rutgers University-Newark incident report link: https://cm.maxient.com/reportingform.php?RutgersUniv&layout_id=7 . You may also contact the Office

of Title IX and ADA Compliance at (973)353-1906 or email at TitleIX@newark.rutgers.edu. If you wish to speak with a staff member who is confidential and does **not** have a reporting responsibility, you may contact the Office for Violence Prevention and Victim Assistance at (973)353-1918 or email run.vpva@rutgers.edu]

If students who have experienced a temporary condition or injury that is adversely affecting their ability to fully participate, you should submit a request via https://temporaryconditions.rutgers.edu .

If you are a military ***veteran*** or are on active military duty, you can obtain support through the Office of Veteran and Military Programs and Services. http://veterans.rutgers.edu/

If you are in need of ***mental health*** services, please use our readily available services.

[Rutgers University-Newark Counseling Center: http://counseling.newark.rutgers.edu/]

[Rutgers Counseling and Psychological Services–New Brunswick: http://rhscaps.rutgers.edu/]

If you are in need of ***physical health*** services, please use our readily available services.

[Rutgers Health Services – Newark: http://health.newark.rutgers.edu/]

[Rutgers Health Services – New Brunswick: http://health.rutgers.edu/]

If you are in need of ***legal*** services, please use our readily available services: http://rusls.rutgers.edu/

Students experiencing difficulty in courses due to ***English as a second language (ESL)*** should contact the Program in American Language Studies for supports.

[Rutgers–Newark: PALS@newark.rutgers.edu]

[Rutgers–New Brunswick: eslpals@english.rutgers.edu]

If you are in need of additional ***academic assistance***, please use our readily available services.

[Rutgers University-Newark Learning Center: http://www.ncas.rutgers.edu/rlc

[Rutgers University-Newark Writing Center: http://www.ncas.rutgers.edu/writingcenter]

[Rutgers University-New Brunswick Learning Center: https://rlc.rutgers.edu/]

[Optional items that many faculty include:

- Students must sign, date, and return a statement declaring that they understand the RU Academic Integrity Policy.

- Students must sign, date, and return a statement declaring that they understand this syllabus.]